

Issues under 35 U.S.C. § 112

Claims 1-31 and 33-42 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly being based on the disclosure which is not enabling. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

The purpose of the requirement that the invention be described and the specification in such terms that one skilled in the art can make and use the claim invention is to ensure that the invention is communicated to the interested public in a meaningful way. The test for enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. In re Wands, 8 USPQ2d 1400 (Fed. Cir. 1988); In re Angstadt, 190 USPQ214 (CCPA 1976).

Among the many factors to be considered in determining whether or not enablement exist are the breath of the claim, nature of the invention, the state of the prior art, and the level of one of ordinary skill in the art, the level of predictability in art, the amount of direction provided by the inventor, the existence of working examples, and the quantity of experimentation needed to make or use the invention based on the content of the disclosure. See Wands.

The first issue raised by the Examiner is apparently that the claims allegedly do not adequately state what a "fabric" is an enabling manner. The second issue raised by the Examiner appears to be that the durability barrier layer allegedly should be claimed as being halogen free (i.e., it is allegedly taught as being critical in the specification and not recited in the claims). The third issue raised by the

Examiner appears to be that allegedly the bonding affinity of the durability barrier layer to the chemical barrier material is taught as critical in the specification and not recited in the claims. These issues will be discussed in turn, below.

Initially, applicant respectfully submits that the initial burden of setting forth a reasonable explanation as to why the claims are not enabled rests squarely with the examiner. In re Wright, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

In the present case, it is clear that the Examiner has not considered all of the enablement factors as required by the Federal Circuit and office policy. See MPEP § 2164.01(a).

More specifically, the Examiner does not provide statements (supported by a technical article or the like) demonstrating while of ordinary skilled in the fabric or protective garment art cannot practice the invention of the rejected claims without the added features requested by the Examiner.

With respect to “what the fabric is,” the Examiner has not demonstrated why the term “fabric” does not provide enough direction and guidance to one of ordinary skill in the fabric art, as required.

The Examiner has not offered an explanation (supported by a technical journal, or the like) as to why the direction provided by the invention in the specification is not sufficient. For example, page 1 of the specification points out numerous examples of fabrics used similarly to the fabric of the present invention.

The specification also provides example and compares the example to Responder ®, a well known protective fabric.

Thus, in considering all the required factors, the experimentation necessary to practice the invention is certainly not undue, and the Examiner has not carried the burden of establishing (with technical support) otherwise. Case law makes it clear that properly reasoned and supported statements explaining any failure to comply with section 112 are a requirement to support a rejection. See Wright, 27 USPQ at 1513. Since the rejection is devoid of such explanation and support, Applicant respectfully submits that this rejection should be withdrawn.

With respect to the “generally halogen free” issue, the Office Action again does not set forth any specific reasons why such a feature is “critical.” As the Examiner is aware, the thermal plastic polyolefin coatings of the present invention are generally halogen free to allow for ease of disposal under EPA rule and regulations. Ease of compliance to EPA rules and regulations is preferred, but not critical in order to practice the invention of the claims. Additionally, the sentence cited by the Examiner states that the coatings are generally halogen free. On its face, it is obvious that halogen free coatings are optional.

With respect to “bonding affinity” the Examiner again does not provide reasons why the lack of such a feature will impart undue experimentation on one of ordinary skill in the art. However, in view of the above amendments, this portion of the rejection is moot.

Issues under 35 U.S.C. § 112, second paragraph

Claims 1-31 and 33-42 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. This rejection is respectfully traversed.

Reconsideration and withdrawal thereof are requested.

The Examiner apparently objects to the term “fabric” since no elements of the fabric are stated. Furthermore, the Examiner apparently objects to the “25% improvement” phrase. Each phrase or term objected to by the Examiner is discussed in turn, below.

A second paragraph of § 112 requires the scope of claims to be reasonably precise. In re Borkowski, 154 USPQ 662 (CCPA 1970). Also, see In re Wiggins, 179 USPQ 421 (CCPA 1973). That is, the Examiner should “allow claims which define a patentable subject matter with a reasonable degree of particularity and distinctness. Some latitude in the manner of expression and aptness of the terms should be permitted even though the claim language is not as precise as the Examiner might desire.” See MPEP § 2173.02.

The Examiner’s rejection of the claims as being indefinite based on use of the term “fabric” is thus improper. As stated above, the specification sets out numerous commercial examples of materials and fabrics that have been used, or currently still in use throughout the U.S. and internationally. This, and the understanding of one of ordinary skill in the fabric art, clearly sets forth the metes and bounds of the

subject matter which applicants regard as their invention with a reasonable degree of certainty, which is all that is required.

The fact that other factors are not further cited in the claim with respect to the phrase "composite chemical barrier fabric" serves, at best, to render the claim "broad", but not indefinite. The breadth of a claim cannot, by itself, render a claim indefinite. In re Gardner, 166 USPQ 138 (CCPA 1970).

The workers skilled in the present art can easily determine whether or not a particular set of conditions exist with respect to a composite chemical barrier fabric of the present invention, particularly in view of the discussion in the specification addressed above.

While the composite chemical barrier fabric of the present invention is novel, use of the term "fabric" certainly is not. The term "fabric" has been used in patent claims over 10,000 times since 1996 alone, indicating the term's recognized definiteness.

One example includes US 6,245,694, issued June 12, 2001 to Davenport et al. In this patent, like the instant application, Examiner Cole was the Primary Examiner and Examiner Guarriello was the Assistant Examiner. Claim 11, presumably definite, is directed to "conductive fibers present in a fabric which is embedded in a sheet." There are no "elements" recited in the claim similar to those instantly requested by the Examiner in this application.

Additionally, please see US 6,235,659, issued May 22, 2001 by Examiner Cole to McAmish et al.: "A medical linen comprising: a fabric substrate; and a coating printed on one or more regions of the substrate, but not the entire substrate, said coating modifying a performance characteristic of the fabric substrate."

Finally, please see US 6,228,783, issued May 8, 2001 by Examiner Cole to Foster, Jr., et al.: "[t]he laundry article according to claim ³2 wherein the support matrix is a fabric sheet."

In the present invention, like the exemplary claims discussed above (all of which issued within the past three months), one of ordinary skill in the art would certainly understand the meaning of the claims with reasonable clarity.

Accordingly, the claims with respect to the garment description are not indefinite and are in full compliance with 35 U.S.C. § 112.

With respect to the "25% improvement" phrase, the Office Action states that "it is not clear what the 25% improvement is compared [sic] since there is no specificity of the ranges of the aspects of the improvement."

Applicant respectfully submits that the phrase clearly compares a multiple layer, chemical barrier material with a multiple layer, chemical barrier material further comprising the claimed durability layer. Furthermore, it is clear that the range is at least 25% with respect to increased puncture resistance and flex-crack resistance. Additionally, examples of tests demonstrating the improved puncture resistance and flex-crack resistance are set forth in the specification. All of the

above complies with the “reasonable degree of certainty” standard discussed above. Therefore, the claims with respect to the improvement phrase are not indefinite and are in full compliance with 35 U.S.C. § 112.

Finally, claims 1, 23, 24, 35, 36, 39, and 40 have been amended for clarity purposes, and point out a test to establish the improvement in both puncture resistance and flex-crack resistance.

Issues under 35 U.S.C. § 102

Claims 1-3, 30, 31, 37, and 38 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Langley, U.S. 5,948,708. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

In order to qualify as a reference under 35 U.S.C. § 102(b), the prior art must have been “patented or described in a printed publication... more than one year prior to the date of the application for patent...” See 35 U.S.C. § 102(b). The ‘708 Patent issued on September 7, 1999. The effective filing date of the instant application is August 4, 1998. Therefore, the ‘708 patent does not qualify as a prior art reference as asserted by the Office Action, and accordingly, Applicant respectfully submits that this rejection should be removed.

Should be 102(e)

Additionally, Applicant respectfully submits that the '708 Patent does not anticipate or render obvious the present invention under any statute. The ‘708 Patent discloses a fabric comprising an inner layer, a flame resistant layer, and a

reflectant layer. The flame resistant layer is disclosed as ideally being a woven fiberglass layer. The flame resistant layer may also comprise carbonized fibers, flame retardant rayon, flame retardant cotton, and flame retardant wool and aramid fibers. The reflectant layer is disclosed as being a metallized polyethylene terephthalate.

The '708 Patent fails to disclose a chemical barrier fabric comprising a thermoplastic polyolefin (TPO) of the present invention coated on at least one side of a multiple layer, chemical barrier material. Further, the chemical barrier material of the '708 Patent does not consist of a thermoplastic polyolefin material of the present invention.

As stated on the Amendment and Response of March 19, 2001, in order to properly set forth a proper rejection under 35 U.S.C. § 102, the "identical invention must be shown in as complete detail as contained in the... claim." See Richardson v. Suzuki Motor Co., 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). In view of the differences outlined above, it cannot be said that the '708 Patent discloses an identical invention as claimed.

To further emphasize Applicants position that the Langley '708 patent is not an identical invention as required, it is known that a reflective surface such as the reflective layer of the Langley '708 patent can only maintain its thermal protective performance and radiant heat reflectance if coated with an infrared invisible layer. See cols. 5 and 6 of Langley '708. Thermoplastic polyolefins of the present invention,

being of the generic polyolefin family are not IR invisible, and therefore would essentially destroy the performance claimed in the Langley '708 patent if above the reflective layer.

Issues under 35 U.S.C. § 103

Claims 4-29, 33-36, and 39-42 are rejected under 35 U.S.C. § 103 as allegedly be obvious over Hauer et al., U.S. 5,626,947. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

The '947 Patent discloses composite chemical barrier films and fabrics that are useful in protective garments. They have a flexible substrate, a barrier film laminated thereon, and a polymeric material coated on the barrier film. On top of the polymeric material may be a polymeric topcoat. See col. 1 of the '947 patent.

The '947 Patent fails to disclose or suggest a chemical barrier fabric comprising a thermoplastic polyolefin (TPO) of the present invention coated on at least one side of a multiple layer, chemical barrier material.

More specifically, Hauer generically discloses a "thermoplastic polymeric adhesive topcoat adhered to the unlaminated side of the barrier film." For example, see the Abstract. Preferred embodiments and working examples utilize *Surlyn*® (available from DuPont) as the top coat on the claimed fabric.

Hauers' generic use of the term thermoplastic resin is not described in sufficient detail throughout the disclosure as to lead one of ordinary skill in the art to modify the Hauer patent to arrive at the present invention.

The fact that a chemical species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a *prima facie* case of obviousness. In re Baird, 29 U.S.P.Q.2d 1550, 1552 (Fed. Cir. 1994). It is well established in the law of obviousness that the references must be considered as a whole.

A particularly relevant consideration is whether or not the express teachings of the reference would have motivated the selection of the claimed invention. In the present case, as discussed herein, the species disclosed and suggested by Hauer teach away from the present invention. See Baird.

One of ordinary skill in the polymer art typically separates polymers into two general categories: thermoplastic and thermosetting. The basis for this classification is the way in which the monomer was polymerized. Thermoplastic polymers are characterized by softening upon heating and hardening upon cooling. Thermosetting polymers do not react to heat since they are cross-linked, and rather degrade upon heating. *Surlyn*® is the trade name for what is termed an "ionomer". Ionomers are a generic class of thermoplastic resins that are produced from ethylene gas and contain ionizable carboxyl groups which create ionic cross links between the polymer chains. A vast number of other subclasses of thermoplastics resins exist such as polyethylene resins, polypropylene resins, vinyl resins such as

polyvinyl chloride, polyvinyl acetate, polyvinylidene chloride, polyvinyl chloride plastisols, polystyrene, styrene acrylonitrile, acrylonitrile-butadiene-styrene (ABS), polycarbonate resins, cellulosic resins such as cellulose acetate, cellulose nitrate, cellulose propionate, cellulose acetate butyrate (CAB), ethyl cellulose, acrylic resins, nylon resins, polyphenylene oxide, acetal resins, polysulfone resins, polyurethane resins, tetrafluoroethylene resins (TFE), polyimide resins, polyallomer resins, and finally, ionomers. Of this expansive list of thermoplastic resins, Hauer mentions the use of only Surlyn®, and low-density polyethylene within the embodiments.

On the other hand, the present invention is directed to a relatively new subclass of thermoplastic resins, thermoplastic polyolefins (TPOs), also known as thermoplastic polyolefin elastomers. Unlike traditional thermoplastics, TPOs are two-component elastomer systems consisting of an elastomer such as EPDM finely dispersed in a thermoplastic polyolefin, most typically polypropylene. It is generally accepted that a generic TPO can be described as a blended compound resin containing more than 20% elastomer in polypropylene.

In view of the above, it is clear that one of ordinary skill in the art would not be motivated, from the disclosure of Hauer, to modify Hauer to arrive at the present invention.

Assuming, *arguendo*, a *prima facie* case of obviousness exists, such case is rebutted by the comparative test data in the attached Declaration under 37 C.F.R. § 1.132.

In summary, the attached 1.132 Declaration compares examples from Hauer to the present invention and finds that the materials of the present invention exhibit superior and unexpected results when compared to the examples of Hauer.

Two commercially available embodiments of the Hauer patent which contain a *Surlyn*® coating were tested with respect to flex crack resistance using the same flex test as described in the present Specification (ISO 7854 Method B). Fabric A (Hauer) is Tychem 7500, and fabric B (Hauer) is Tychem 10,000 (both fabrics are available from DuPont). Fabric A, a high chemical barrier fabric which has a *Surlyn*® layer on the exterior surface showed an average flex crack resistance less than about 1000 cycles. Fabric B, taken from a finished garment made of Tychem 10,000 material (MarMac, Serial #406882, mfg. July 12, 1995) also contains a *Surlyn*® outer layer, and showed an average flex crack resistance less than about 1000 cycles. See the Todd Declaration at page 6.

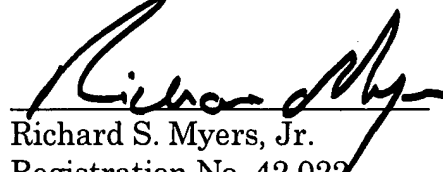
On the other hand, embodiments of the present invention exhibited a flex crack resistance of less than 40,000, and less than 480,000 cycles. As stated in the attached Declaration, these results are superior and unexpected, and further demonstrate that the the Hauer patent and the present application rely on significantly different thermoplastic resins, with measurable different results.

From the foregoing, further and favorable reconsideration in the form of a Notice of Allowance is in order and such action is earnestly solicited.

If the Examiner has any questions concerning this Amendment or the Application in general, he is respectfully urged to contact Richard S. Myers, Jr. (Reg. No. 42,022) at the number listed below.

The Commissioner is authorized to charge any deficiency or credit any overpayment in connection with this Amendment to Deposit Account No. 23-0035.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Richard S. Myers, Jr.", is written over a horizontal line.

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Version With Markings to Show Claim Changes Made

Claim 1 (Four Times Amended). A composite chemical barrier fabric having improved durability comprising:

a multiple layer, chemical barrier material having a first side and a second side; and

a durability barrier layer coated on at least one of said first or second side comprising a thermoplastic polyolefin with an inherent bonding affinity to the chemical barrier material, the coated chemical barrier composite achieving at least 25% improvement in ASTM 1342 puncture resistance and at least 25% improvement in modified ISO 7854 Method B flex-crack resistance of the fabric when compared to a fabric not having said durability barrier layer.

Claim 13 (Twice amended) A composite chemical barrier fabric having improved durability, comprising:

a multiple layer, chemical barrier material having a first side and a second; and

a durability barrier layer coated on at least one of said first or second side comprising a layer of a thermoplastic olefin resin having an inherent bonding affinity to the chemical barrier material, the resin having an ASTM D1238 melt flow rate 230/2.16g/10 min of about 0.45; an ASTM D793 density at 23 degrees

Celsius g/cm³ of about 0.88; and an ASTM D1693 environmental stress-cracking resistance, hours of about >3,000.

Claim 23 (Amended). The composite chemical barrier fabric of Claim 13 wherein the modified ISO 7854 Method B flex crack resistance of the fabric is enhanced by at least 25% through the combination of a multi-layered chemical barrier film and the added layer of thermoplastic olefin resin.

Claim 24 (Amended). The composite chemical barrier fabric of Claim 13 wherein the ASTM 1342 puncture resistance of the fabric is enhanced by at least 25% through the combination of a multi-layered chemical barrier film and the added layer of thermoplastic olefin resin.

Claim 30 (Amended). A composite chemical barrier fabric having improved durability comprising:

a multiple layer, chemical barrier material having a first side and a second side; and

a durability barrier layer coated on at least one of said first or second side comprising a thermoplastic polyolefin resin having an inherent bonding affinity to the chemical barrier material, the resin having an ASTM D1238 melt flow rate 230/2.16g/10 min of about 0.45.

Claim 35 (Amended). The composite chemical barrier fabric of Claim 30, wherein the fabric achieves at least about a 25% improvement in ASTM 1342 puncture resistance compared to a fabric without the durability layer.

Claim 36 (Amended). The composite chemical barrier fabric of Claim 30, wherein the fabric achieves at least about a 25% improvement in modified ISO 7854 Method B flex crack resistance compared to a fabric without the durability layer.

Claim 37 (Amended). A composite chemical barrier fabric having improved durability comprising:

a multiple layer, chemical barrier material having a first side and a second side; and

a durability barrier layer coated on at least one of said first or second side comprising a thermoplastic polyolefin resin having an inherent bonding affinity to the chemical barrier material, the resin having an ASTM D793 density at 23°C g/cm³ of about 0.88.

Claim 39 (Amended). The composite chemical barrier fabric of Claim 37, wherein the fabric achieves at least about a 25% improvement in ASTM 1342 puncture resistance compared to a fabric without the durability layer.

Claim 40 (Amended). The composite chemical barrier fabric of Claim 30, wherein the fabric achieves at least about a 25% improvement in modified ISO 7854 Method B flex crack resistance compared to a fabric without the durability layer.